CLAIMS

We Claim:

1. An apparatus for evaluating the presence of a target polypeptide in a sample, comprising an addressable array of capture agents that do not contain the amino acid lysine, with said capture agents linked to a substrate.

2. An apparatus as recited in claim 1, wherein the capture agents are polypeptides.

3. An apparatus as recited in claim 1, wherein the capture agents are peptides.

4. A kit for evaluating the presence of a target polypeptide in a sample, comprising:
   (a) a set of capture agents which do not contain the amino acid lysine or reactive amines; and
   (b) a label for labeling the target polypeptide on the reactive amines.

5. A kit as recited in claim 4, wherein the capture agents are polypeptides.

6. A kit as recited in claim 4, wherein the capture agents are derived from fusion proteins.

7. A kit as recited in claim 5 or 6, wherein the lysine residue of the target polypeptide is reacted with a fluorophore to label the target polypeptide and distinguish it from the capture agents.

8. A kit as recited in claim 5 or 6 wherein a fluorophore is reacted with the target polypeptide after it has been bound to the capture agents.

9. An apparatus for evaluating the presence of a target polypeptide in a sample, comprising an addressable array of polypeptide capture agents that have a binding domain and an attachment point for fastening the capture agents to a substrate.

10. An apparatus as recited in claim 9, wherein the capture agent does not contain lysine amino acid residues.

11. An apparatus as recited in claim 10, wherein the capture agents comprise both variable and non-variable regions.

12. An apparatus as recited in claim 10, wherein a combinatorial library is prepared in which the capture agent is produced from mRNA so that no adenine is present in the third position of the codon.

13. An apparatus as recited in claim 10, wherein a combinatorial library is prepared in which the capture agent is produced from mRNA so that no lysine is incorporated during translation of the AAA and AAG codons

14. An apparatus as recited in claim 10, wherein the capture agents comprise Fv fragments.

15. An apparatus as recited in claim 10, wherein the capture agents comprise Fab fragments.

16. An apparatus as recited in claim 10, wherein the capture agents comprise $(Fab)_2$ fragments.

17. A polypeptide for use as a capture agent that does not contain the amino acid lysine residue, or contains an unreactive or blocked lysine residue, produced by the steps of:

(a) fusing mRNA and the protein it encodes during translation;

(b) isolating the mRNA that codes for the protein product that does not contain lysine residues, or that contains unreactive or blocked lysine residues; and

(c) producing the capture agent.

18. A polypeptide as recited in claim 17, further comprising repeating steps a and b of claim 17.

19. A polypeptide as recited in claim 17 or 18, further comprising the step of reacting the mixture of fusion proteins with an amine reactive solid support in order to remove the polypeptides containing lysine.

20. A polypeptide as recited in claim 17 or 18, further comprising the step of reacting the mixture of fusion proteins with an amine reactive reagent in order to modify the lysines in the polypeptides.

21. A method for identifying a target molecule using an array polypeptide capture agent, comprising the steps of:

(a) binding a target molecule to the capture agent;

(b) adding a label to the target molecule so that the capture agent and target molecules can be distinguished.

22. A method for identifying a target molecule, as recited in claim 21, wherein the label is added to an amino acid selected from the group consisting of arginine, lysine, cysteine, glutamic acid, aspartic acid and histidine.

23. A method for identifying a target molecule, as recited in claim 22, wherein the amino acids are altered with an organic or inorganic label.

24. A method for identifying a target molecule, as recited in claim 23, wherein the organic label is a fluorophore.

25. A method as recited in claim 24, wherein the altered target molecule is quantified and distinguished from the capture agent using an external apparatus.

26. A kit for selecting capture agents that do not contain the amino acid lysine or reactive amines, comprising:

(a) a set of polypeptide capture agents that do not contain the amino acid lysine or reactive amines; and

(b) a target protein having a reactive amine capable of modification after binding to the capture agent.